Terrace Bay District Fisheries Management Plan 1987 - 2000

A Summary of Background Information and Optional Management Strategies

Ontario

Ministry of Natural Resources

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TERRACE BAY DISTRICT FISHERIES MANAGEMENT PLAN - 1987-2000

A SUMMARY OF BACKGROUND INFORMATION AND OPTIONAL MANAGEMENT STRATEGIES

1.0 INTRODUCTION

1.1 Purpose

The purpose of the Terrace Bay District Fisheries Management Plan is to identify long-term management direction (year 2000) to meet specific objectives and to identify short-term (1987-92) fisheries management programs to be carried out within the district. The District Fisheries Management Plan will test strategic program policy direction (District Land Use Guidelines) through detailed resource analysis and form the basis for revisions if required.

This document summarizes background fisheries resource information contained within the detailed background report and introduces various optional management strategies and tactics which can be implemented. The document will be presented to the public at an open house. This will provide an opportunity for the general public to review background information, identify problems and issues, relay specific needs and wants, and provide input into the future direction of fisheries management within the district.

Comments and input from the public will be considered in the evaluation and selection of the preferred management strategies.

1.2 The Planning Process

The Terrace Bay District Fisheries Management Plan is being developed as part of the Ministry of Natural Resources integrated resource management planning system.

The Northwestern Ontario Strategic Land Use Plan provides general policies, targets and guidelines for resource management within Northern Ontario (O.M.N.R., 1982b).

The Terrace Bay District Land Use Guidelines (D.L.U.G.) defines resource management targets within the Terrace Bay District and

presents strategies for achieving those targets (O.M.N.R., 1982a).

The Terrace Bay District Fisheries Management Plan falls under the general framework of the District Land Use Guidelines but provides a more detailed plan regarding resource management for achieving fisheries targets.

The Lake Superior Strategic Fisheries Management Plan (O.M.N.R., in Press) outlines the objectives, targets and strategies for fisheries management in the Terrace Bay District waters of Lake Superior.

Following the review of this summary document a draft Fisheries Management Plan will be developed. It will identify both long-term (year 2000) objectives and short-term (5 year) fisheries management programs to be carried out within the Terrace Bay District. The final plan will be amended every 5 years by developing new 5-year implementation schedules and by revising aspects of the Management Plan that become outdated.

The public will also have an opportunity to review and comment on the draft Fisheries Management Plan before the final Management Plan is developed (Figure 1).

1.3 Detailed Background Report

A detailed background information report containing information on the fisheries resource, users, level of resource use, and problems and issues in managing district fisheries resources was used to form the basis for the management direction described in this report. This supporting document is available for public review at the Terrace Bay District Office and at the Manitouwadge Work Centre.

2.0 BACKGROUND INFORMATION

2.1 The Resource Base

2.1.1 Perspective

Terrace Bay is one of the 5 Ministry of Natural Resources (M.N.R.) Administrative Districts in the North Central Region (Figure 2). It extends from Latitude $49^{o}35'$N southward to the Canadian/U.S.A.

FIGURE 1.

THE PLANNING PROCESS

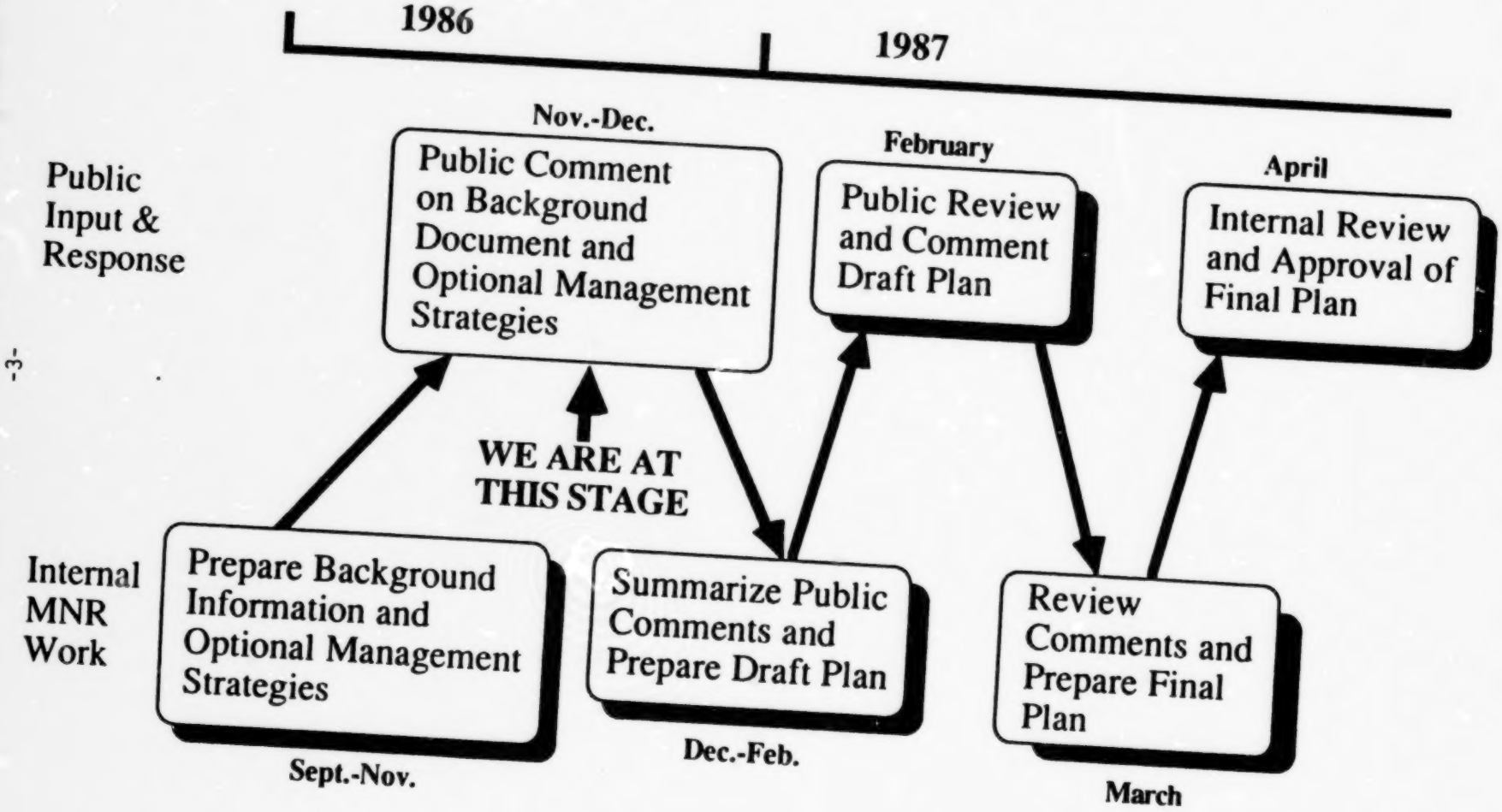
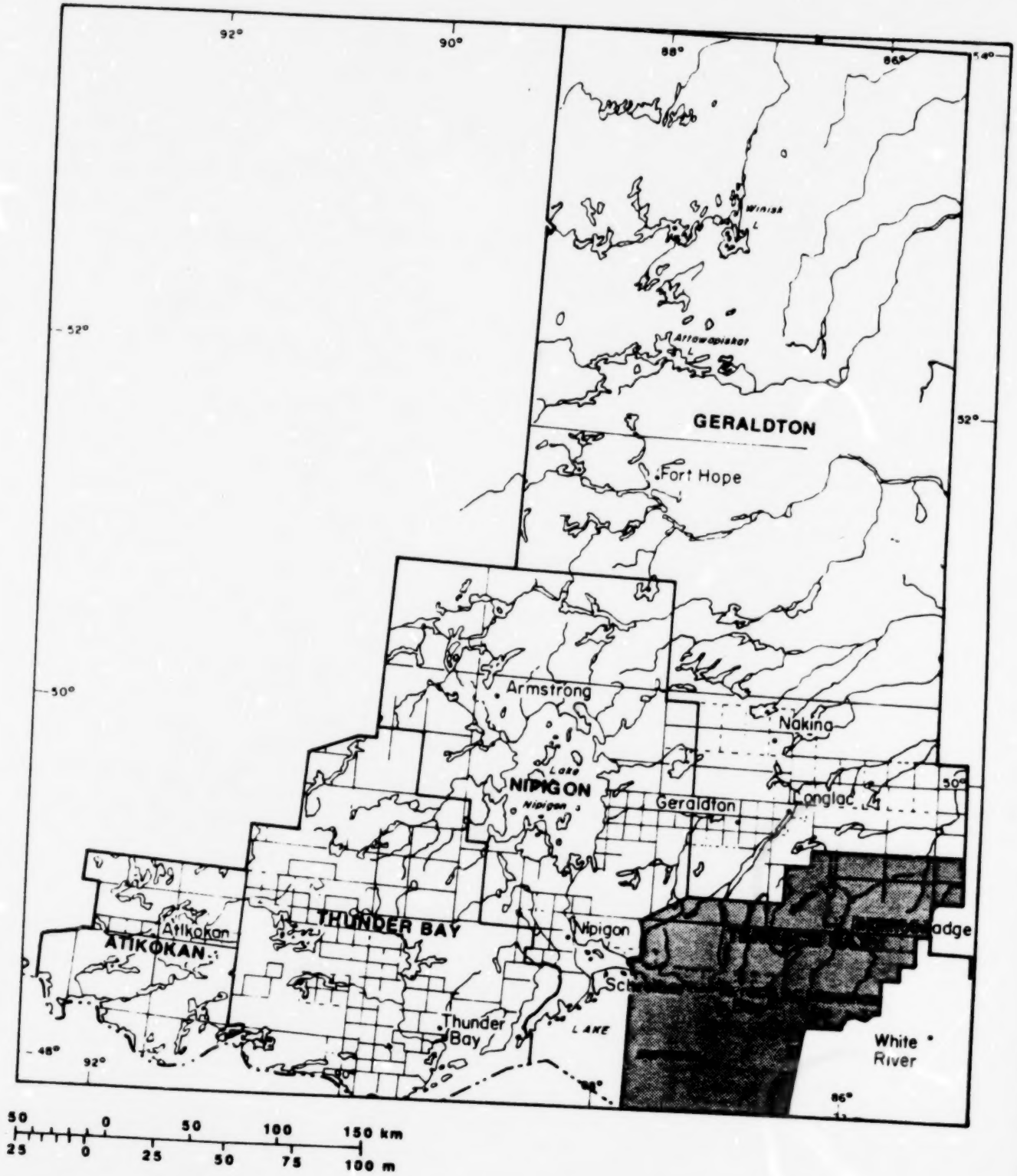


FIGURE 2

TERRACE BAY DISTRICT

WITHIN

NORTH CENTRAL REGION



International Border and from Longitude 85°00'W to 87°45'W. The district forms the southeastern portion of the North Central Region and is bordered by Geraldton District to the north and Nipigon District to the west. It is located mostly within the Territorial District of Thunder Bay and partially within the Territorial District of Algoma. The Terrace Bay District is situated approximately 148 km east of the City of Thunder Bay and 361 km west of the City of Sault Ste. Marie.

Located within the district are 4 towns, 3 villages and 2 Indian Reserves (Figure 3). There are no major cities within the district. The dominant industry in the district is the forestry/pulp and paper industry with mining and railroads being major secondary industries. The total population of the district, as of 1985, was 11,765. Public land managed by the M.N.R. amounts to 98% of the district land base (O.M.N.R., 1982a). The remaining 2% is held by the private sector. Very little land in the district is owned by the Federal Government.

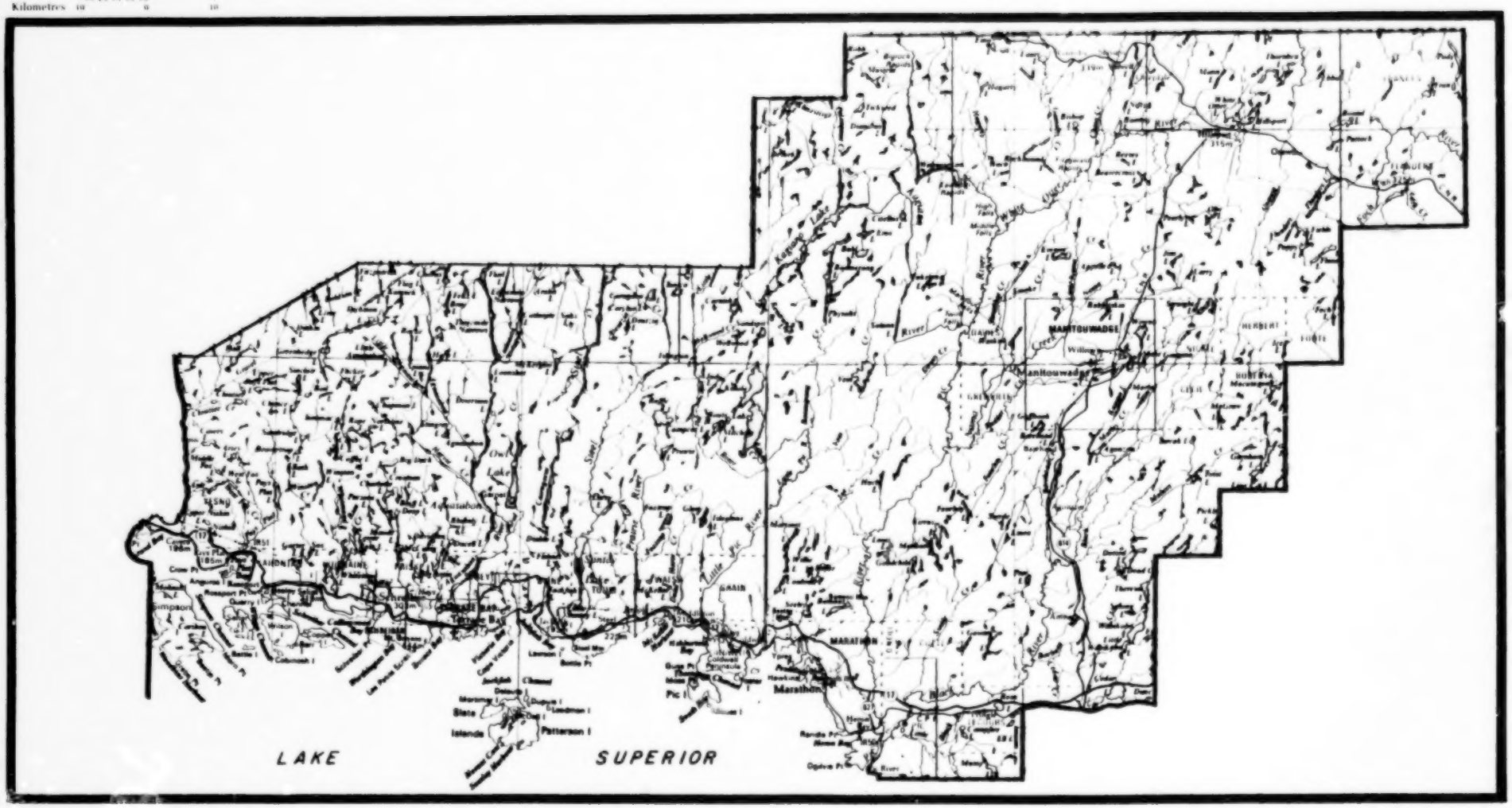
The Terrace Bay District covers 1,237,600 ha of land (Clarke, 1983), 1,068,000 ha of water on Lake Superior (MacCallum, 1986), and 69,000 ha of inland waters. The Superior shoreline extends approximately 322 km. The mean water level of Lake Superior is 183 m above sea level.

Terrace Bay District falls mainly within the Great Lakes-St. Lawrence Watershed System and partly within the Hudson-James Bay System. The Hudson-James Bay System flows north into the Albany River System. The Great Lakes-St. Lawrence System splits into 2 secondary divisions with waterways flowing south into Nipigon Bay and Lake Superior. Secondary divisions are further split into 5 tertiary watersheds, which are further split into many localized watershed units. A height of land surrounding the district causes this natural flow and prevents fish migration from one watershed to the next. The only exception to this occurrence is the Long Lake System which was diverted in 1939 to facilitate a Hydro plant for Terrace Bay.

The Terrace Bay District is composed of predominately sandy soils

Figure 3

TERRACE BAY DISTRICT



with the majority of it underlain by granite rock. Weakly broken plains are found in the northeastern part of the district and extend southward following the river valleys of the Black, Pic and Little Pic Rivers. These rivers and valleys contain shallow to deep deposits of sand, silt and clay. In the southcentral and southwestern sections of the district high, rocky ridges and steep rift valleys are common. Strongly broken uplands of bare bedrock predominate here with scattered pockets of deep and shallow sandy soils deposited in the valleys along the rivers flowing into Lake Superior. This section contains low alkalinity, nutrient poor lakes. This type of lake limits fish production and is most sensitive to acidification.

2.1.2 The Resource

The Terrace Bay fisheries management planning area covers the water resources contained within the 2,374,600 ha of land and water that makes up the Terrace Bay Administrative District of the Ministry of Natural Resources. The estimated potential fisheries yield of all water bodies within the district, including Lake Superior, is 547,326 kg/yr (Table 1). This differs from the Strategic Land Use Plan estimate of 811,000 kg of fish/yr, primarily due to updated calculations for Lake Superior (O.M.N.R., in Press).

The main sport fish species sought by anglers in the Terrace Bay District waters are lake trout, brook trout, rainbow trout, walleye (yellow pickerel) and northern pike. Other species caught in this district are smallmouth bass, yellow perch, lake whitefish, pink salmon, coho salmon, and chinook salmon. The main commercial fish species caught by commercial operators are whitefish, herring, chub and lake trout. Minnow species important to the bait fish industry are dace, chub and suckers. Fifty-one fish species are found in Terrace Bay District waters.

2.1.2a Lake Superior

The portion of Lake Superior which falls within the Terrace Bay District accounts for approximately 93.9% of the district's water base. The area of Lake Superior within the district is approximately 1,068,000 ha (MacCallum, 1986). The estimated

TABLE 1. SUMMARY OF FISHERIES RESOURCE DATA

	TOTAL SURFACE AREA (ha)	ESTIMATED TOTAL POTENTIAL YIELD (kg/yr)	ALLOWABLE YIELD BY SPECIES AND SPECIES ASSEMBLAGE (kg/yr)								
			BROOK TROUT	LAKE TROUT	LAKE WHITEFISH	NORTHERN PIKE	YELLOW PERCH	WALLEYE	SMALLMOUTH BASS	UNKNOWN	TOTAL
INLAND LAKES											
Cold Water	11,294	19,660	2,187	3,223	978	1,804	47	176	107	---	8,522
Warm Water	15,530	67,075	---	---	4,801	15,999	6,317	15,650	---	---	42,767
Unknown	28,770	134,115	NA	NA	NA	NA	NA	NA	NA	46,940	46,940
Problem	*	668	---	90	108	167	---	182	---	---	547
MAJOR STREAMS											
Cold Water	1,705	6,137	NA	NA	NA	NA	NA	NA	NA	1,473	1,473
Warm Water	2,174	10,871	---	NA	NA	NA	NA	NA	NA	3,261	3,261
TOTAL INLAND WATER	59,473	238,526	2,187	3,313	5,887	17,970	6,364	16,008	107	51,674	103,510
LAKE SUPERIOR	1,068,000										
Sport Fishery	---	67,640		35,000						6,000	41,000
Commercial Fishery	---	241,160		25,000						216,160	241,160
TOTAL ALL WATERS	1,127,473	547,326	2,187	63,313	5,887	17,970	6,364	16,008	107	273,834	**385,670

* - Area of problem waters are included in the appropriate lake type areas.
** - Of the total allowable yield, 144,510 kg/yr is sport fish and 241,160 kg/yr is commercial fish.
NA - Not available.

potential fisheries yield for the area of Lake Superior within the Terrace Bay District is 308,800 kg of fish/yr (O.M.N.R., in Press) (Table 1).

2.1.2b Inland Lakes

In general terms, the district is split in half. Warm water lakes extend eastward from Killala Lake. Cold water lakes include Killala and those westward as well as Lake Superior. The lakes in the district are mostly elongated and oriented in a south and southwestern direction.

Inland water area for the Terrace Bay District amounts to 68,997 ha (O.M.N.R., 1981). There are approximately 6,488 inland lakes in the district. Of these 1,126 are 10 ha or greater in size and total 55,594 ha. As of 1982, 146 lakes or 42% of water area greater than 9.9 ha have had complete aquatic inventory surveys. Fifty-four of these contain salmonid fish species and are classed as cold water and total 9,826.3 ha. The remaining 92 are warm water (which do not support salmonid species) and cover 13,662.7 ha of inland water. Inland lakes account for approximately 5.8% of the district's water base with 1.0% being cold water, 1.4% being warm water and 3.4% being water bodies in which the fish species present are not known. The estimated total potential fisheries yields for all inland lakes is 221,518 kg of fish/yr. The yield is broken down by cold water, warm water, unknown and problem lakes in Table 1.

Problem lakes are considered to be lakes in which the total potential yield is not attainable. This could be due to high mercury levels, an absence of sport fish, fish sanctuaries, log drives, pollution, etc. The allowable yield which is attainable from these lakes has been included in the inland lakes total potential yield.

2.1.2c Rivers/Streams

Rivers and streams in the Terrace Bay District tend to have medium to steep gradients although a few streams meander. Rainbow trout spawn in virtually all the rivers and streams flowing into Lake

Superior, as do many of the salmon species. Spawning extends upstream to the first major obstacle in the stream.

There are approximately 21 major rivers/streams in the district with an estimated surface area of 3,878.85 ha (Table 1). The total length of these rivers/streams is 1,058.5 km; 578.3 km are cold water and 480.2 km warm water. Major rivers and streams account for approximately 0.3% of the district's water base. The estimated total potential fisheries yield for rivers/streams in the district is 17,008 kg of fish/yr.

2.2 Resource Use and Projections

2.2.1 Sport Fishing

In 1980 approximately 10,200 adult anglers spent 83,360 angler days fishing in the Terrace Bay District. It was estimated that 8,200 of these anglers were Ontario residents and 2,000 were non-residents. Resident anglers accounted for 72,160 angler days and non-residents accounted for 11,200 angler days. Approximately 80% of the Ontario resident anglers were residents of Terrace Bay District (Bedi and Clifford, 1982). An estimated 271,000 fish were harvested by anglers in 1980. Resident anglers caught and kept 251,000 fish and non-resident anglers kept 20,000 fish (Bedi and Clifford, 1982).

The population of the district is expected to increase by 47% by the year 2000, primarily due to the development of the Hemlo area (Ontario Ministry of Municipal Affairs, 1986). Based on this increase, total angler days could be expected to rise from 83,360 to approximately 122,000. Resident angler days could be expected to rise to 105,610 from 72,160, and non-resident angler days could be expected to rise to 16,390 from 11,200. Based on an angling satisfaction rate of 1 kg of fish per angler day (O.M.N.R., 1982b), 122,000 kg of fish could be expected to be harvested by anglers in the year 2000.

2.2.2 Commercial Fishing - Food

Since 1968 Lake Superior has been the only commercially fished lake in the Terrace Bay District. Presently, 5 commercial fishing licences are issued annually for the area of Lake Superior within

the district. Three other fishermen have quotas on the Lake Superior Shoals within the district but are licenced through other districts. The market is generally local with approximately 90% of the fish staying in the Terrace Bay/Thunder Bay area and the remaining 10% going to the Sault Ste. Marie area (J. Chappel, pers. comm.). In 1985, 5 licenced fishermen on Lake Superior reported harvesting approximately 14,198 kg of fish worth a wholesale value of $22,792.00.

Commercial fishing quotas for 1985 for the district's area of Lake Superior are listed in Table 2. In addition to these quotas there are 53,353 kg of unallocated quotas still available in outside zones (Figure 4). This brings the total available quotas in the Terrace Bay District to 150,183 kg. The apparent low utilization of the present quotas can in part be attributed to poor market conditions for some species, travel distances, and the vast stretches of unsheltered waters on this portion of Lake Superior.

Individual commercial species quotas for the Terrace Bay District are designed to stabilize harvest levels at the allowable biological yield. Some fluctuations in the quotas may occur in accordance with fluctuations in fish year class abundance.

2.2.3 Commercial Fishing - Bait

The Terrace Bay District is currently under the "Exclusive Use Block System" where one bait fish harvester is licenced per bait fish area or block. Fifty-four bait fish areas are available to bait harvesters. At the present, only 10-16 blocks are licenced per year. Generally, only the bait fish blocks along the main access roads are licenced. The bait fish industry in the district is typically a part-time operation with all minnows being sold locally. The most important commercial minnow species in order of commercial value are dace, chub and suckers.

In 1985, the 5,355 dozen bait fish caught were valued at $8,457.00. Terrace Bay District has a small but stable commercial bait fish industry. It is not expected to increase significantly in the years to come.

TABLE 2. LAKE SUPERIOR COMMERCIAL FISH QUOTAS - TERRACE BAY DISTRICT 1985 (kg)

NEW ZONE	SPECIES												TOTALS
	LAKE TROUT	WHITEFISH	WALLEYE	NORTHERN PIKE	STURGEON	HERRING	CHUB	MENOMINEE	PACIFIC SALMON	PERCH	SMELT	PINK SALMON	
11	3,300	13,600	25	250	50	230	2,000	200	X	300	UNL	2,334	22,289
16	10,000	X	X	X	X	X	9,650	UNL	X	X	UNL	X	19,650
18	1,150	5,300	25	110	X	175	7,875	UNL*	X	X	UNL	1,333	15,968
19	1,350	6,200	100	15	100	200	10,125	UNL**	X	X	UNL	333	18,423
20	X	X	X	X	X	X	20,475	X	X	X	X	X	20,475
TOTALS	15,800	25,100	150	375	150	605	50,125	225	X	300	UNL	4,000	96,830

UNL - Unlimited quota.
X - No harvest permitted.
* - A 10 kg quota is allocated to one licence in this zone.
** - A 15 kg quota is allocated to one licence in this zone.

NOTE: 53,353 kg in quotas still available in outside zones.

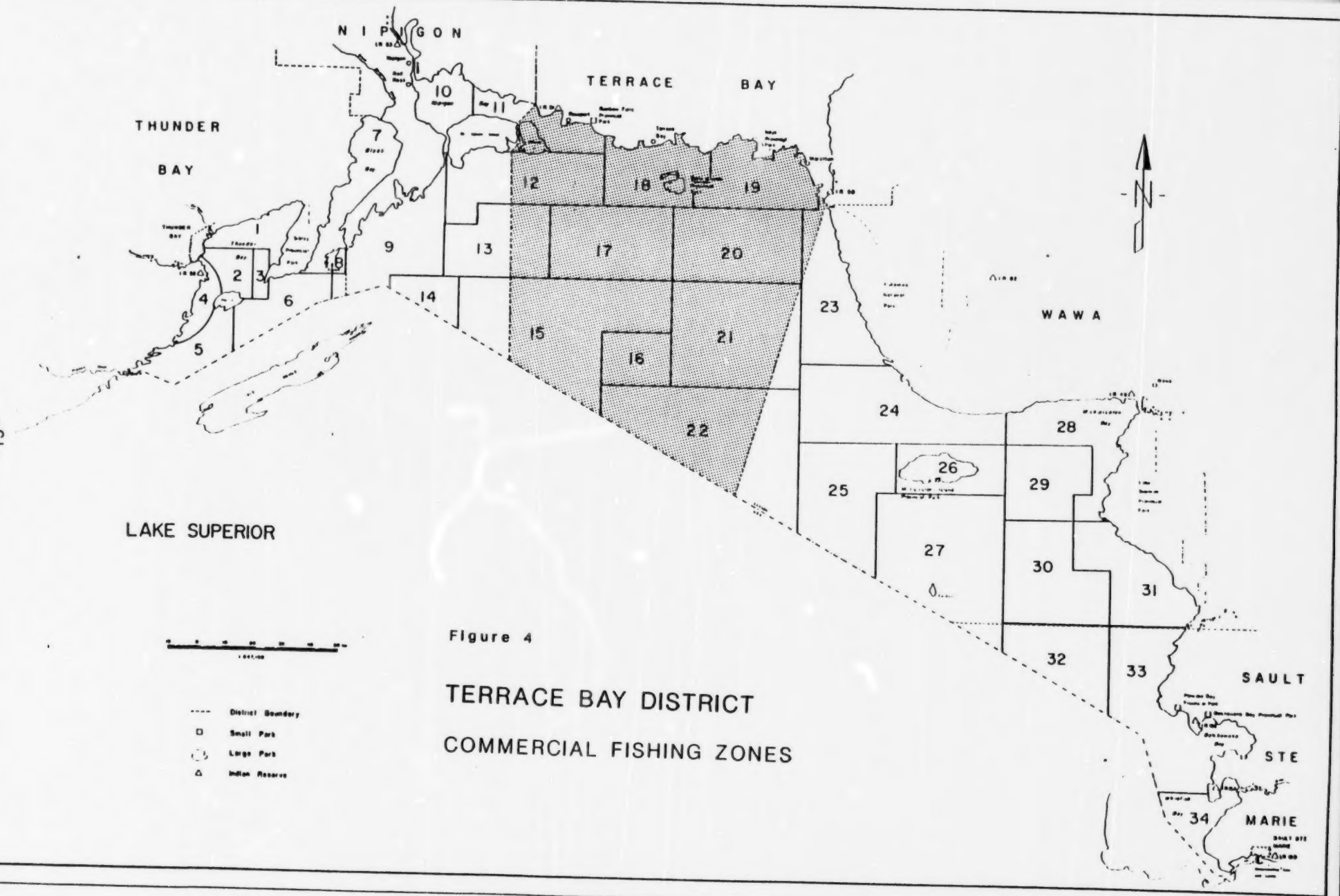


Figure 4

TERRACE BAY DISTRICT

COMMERCIAL FISHING ZONES

2.2.4 Tourist Operations

Currently 8 commercial tourist operators cater to anglers in the Terrace Bay District. These tourist operations are generally spring to fall operations. Four are dependent upon the Highway 17 tourist traffic while the other 4 offer fly-in services to outpost camps. Sixteen of the district's 37 outpost camps offer fishing; 12 on walleye and northern pike lakes, 2 on northern pike only lakes, 1 on a brook trout lake, and 1 on a northern pike and lake trout lake. There are also 3 lodges located on 2 lakes within the district. Two are on a pike and walleye lake, the other is on a lake trout lake. It is estimated that 75% of the tourist outfitters' clientele are American (W. Robinson, pers. comm.).

In 1982, 610 anglers spent an average of 4.6 days per person fishing at district outpost and base camps. Fly-in charters catered to 140 persons for an average of 4 days per person. These operations totalled 3,366 user days and grossed a revenue of $160,000.00 (Courtney, 1983).

Fish derbies are another major stimulus to commercial tourism along the north shore of Lake Superior. They are a major source of revenue and advertising for local shoreline communities.

2.2.5 Non-Consumptive Users

The Terrace Bay District presently has 1 significant viewing area at the outlet of the Ontario Hydro generating station on Terrace Bay in Lake Superior. During the fish spawning period up to 200 people per year have viewed the congregation of pink salmon here. Other creeks which are easily accessible to viewers also receive substantial use.

Another non-consumptive user group in the Terrace Bay District is scuba divers. In the Terrace Bay/Schreiber area the North Shore Dive Club is very active.

One other source of non-consumptive users is those people who attend fish derbies but do not actually fish. The majority of the people attending the Rossport Lake Trout Derby are spectators who

come to view the fish that are caught and partake in the festivities.

2.2.6 Other Users

Fish and Game Clubs utilize the fisheries resource by organizing fish derbies and getting involved with the management of fish and wildlife resources in the district.

Although there is no data available on the time canoeists or cottagers spend angling, these are two other groups that utilize the fisheries resource.

Other users of the fisheries resource are the various research groups and individuals who study or collect fish in the district. In Terrace Bay, 10 to 15 Scientific Collector's Permits are issued annually.

2.3 Supply/Demand Analysis and Target Refinement

Fisheries management targets are described in the District Land Use Guidelines (D.L.U.G.). To test the targets the following methodology was used:

(a) The potential yield for all district lakes was calculated:

The potential yield for all species (sport and commercial) is 547,326 kg/yr. However, targets developed for anglers pertain only to sport fish (lake trout, walleye, brook trout, northern pike, yellow perch, smallmouth bass and lake whitefish). Therefore, only the potential yield for these species, 144,510 kg/yr, is considered. This is a combination of the total known allowable sport fish yield plus 35% of the potential yield from lakes about which little is known plus the allowable sport fish yield (salmon, rainbow and lake trout) from Lake Superior.

The allowable potential yield for lake trout is 38,313 kg/yr. It is included in the sport fish potential yield of 144,510 kg/yr.

The allowable potential yield for the commercial fishery is 241,160 kg/yr. Of this total, lake trout comprise 25,000 kg/yr (O.M.N.R., in Press).

(b) The current use for sport and commercial fisheries was determined:

From the most recent Ontario angler surveys available, Bedi and Clifford (1982), it was estimated that 10,200 adult anglers spent approximately 83,000 angler days fishing in the Terrace Bay District. This translates to 83,000 kg of fish/yr at an angler satisfaction level of 1 kg of fish per angler day. Included in this total is 16,380 angler days spent fishing for lake trout (16,380 kg of lake trout harvested).

The reported commercial fish harvest for 1985 was 14,198 kg. Included in this total is the lake trout harvest of 4,970 kg.

(c) The projected use for the sport fisheries was calculated from the population projections and applied to the estimated present number of angler days spent in Terrace Bay District:

The population of the district is projected to increase by 47% by the year 2000 (see Section 2.2.1).

The current number of angler days spent in the Terrace Bay District is estimated to be 83,000 (Section 2.2.1). Thus, by the year 2000 it could be expected that 122,000 angler days will be spent in the district, or at an angler satisfaction rate of 1 kg of fish per angler day there could be a demand for 122,000 kg of fish/yr. Of this total, the lake trout demand could be expected to be 24,079 kg/yr.

(d) The projected commercial use was calculated:

The present commercial fish quotas in the Terrace Bay District total 150,183 kg. This includes 96,830 kg of allocated quota plus 53,353 kg of unallocated quota. By the year 2000 an additional 8,133 kg/yr of lake trout is expected to be available to the commercial fish operators due to the expected rehabilitation of the lake trout (O.M.N.R., in Press).

Thus, the projected commercial harvest is expected to be 158,316 kg/yr. Of this total 25,000 kg/yr could be expected to be lake trout.

(e) The D.L.U.G. targets were compared to the revised targets:

Targets (kg/yr)	Sportfish	Lake Trout	Commercial Fish
D.L.U.G.	100,000	0.25 to 0.75 kg/ha of lake trout water	535,000
Revised	122,000	63,313*	158,316

*The sport fish component of this number is included in the revised sport fish target.

The sport fish target differences are due to the projected population increases by the year 2000. The commercial fish targets differ due to refinements of the quotas and the allowable yield calculations. The revised lake trout target includes 60,000 kg/yr of sport and commercial lake trout from Lake Superior (O.M.N.R., in Press) and 3,312 kg/yr (0.37 kg/ha) of lake trout from inland lakes.

Comparing the revised targets to the allowable yields (Table 3) it initially appears that the Terrace Bay District will be in a surplus situation. However, upon closer examination some problems become apparent.

(a) The total allowable sport fish yield includes the allowable yields from all district water bodies. However, not all water bodies are accessible so fishing effort is concentrated on those that are accessible, particularly water bodies in close proximity to major communities. These water bodies will then be receiving more fishing pressure than they can sustain.

(b) The inland lake trout target is at the maximum allowable yield. This allowable yield assumes fishing pressure is distributed equally between all lake trout waters. However, as in problem (a) above, not all of these lakes are accessible. Therefore the accessible lakes will receive more pressure than they can sustain and the lake trout populations of these lakes will decline.

(c) The total allowable yield also includes the allowable yield for

TABLE 3. TARGET REFINEMENT[1]

	CURRENT USE (kg/yr)	PROJECTED USE (kg/yr)	DLUG TARGET (kg/yr)	ALLOWABLE YIELD (kg/yr)	INTERIM REFINED TARGET (kg/yr)
Commercial Fishery					
Bait fish (doz.) (1985)	5,355 doz.		To meet demand		To meet demand
Food Fish (kg) (1985)	14,198	158,316	535,000	241,160	158,316
Sport Fishery (1980)					
Users					
- Residents	72,160	105,608			
- Non-Residents	11,200	16,392			
Total	83,360	122,000	100,000	144,510	122,000

[1] The use and target figures are based upon an angling satisfaction rate of one kilogram per angler day (1 angler day = 4 angler hours).

species such as lake whitefish, yellow perch and northern pike. Locally, anglers tend to select for brook trout, lake trout and walleye. Thus, because the anglers' harvest is not as diversified as the allowable yield estimate assumes, the species which are targeted for will receive more fishing pressure than they can sustain.

(d) The commercial fish lake trout target assumes lake trout stocks in Lake Superior will be rehabilitated and available by the year 2000.

Since the Terrace Bay District has a relatively stable bait fish industry with only 10-16 of the 54 available bait blocks being licenced annually, any increase in bait fish demand will be well within production capabilities of district waters. Therefore, the D.L.U.G. bait fish target of "to encourage the bait fish industry to meet the demand by the year 2000 in a manner which ensures the maintenance of stable fish communities" will not be refined.

2.4 Problems and Issues

A number of problems and issues related to meeting the fisheries resources targets by the year 2000 have been identified in the previous section (2.3).

For the sport fishery these problems include:

(1) The lack of a diversified sport fish catch (most anglers select for lake trout, brook trout and walleye) places excessive pressure on the preferred species.
(2) The projected lake trout demand exceeds the present capability of the accessible lake trout waters of the district to produce this species.
(3) Fishing effort is being concentrated on accessible lakes in close proximity to the major communities.
(4) The commercial lake trout target assumes that Lake Superior lake trout stocks will be rehabilitated and available by the year 2000.

Thus, in order to meet the future demand for sport fish in the

Terrace Bay District, district waters must be managed to achieve their greatest sustainable yield. In order to accomplish this the following problems and issues must be addressed on a district-wide basis for all water bodies.

2.4.1 Loss of Environmental Quality

Habitat degradation has led to a loss of environmental quality in a number of district water bodies. This has contributed to decreased fish production and/or fish community imbalances which results in the reduction of fishing opportunities (Table 4).

Environmental quality may be lowered through timber, mineral or aggregate extraction, industrial or municipal pollution, acidification or the construction and operation of water control structures. In addition, the presence of contaminants in fish flesh may render it unsuitable for human consumption.

2.4.2 User Conflicts

Conflicts arise between both consumptive and non-consumptive users of the fisheries resource. These conflicts may be real or perceived. The most obvious conflicts occur between consumptive users. These users include resident and non-resident anglers, commercial fish operators and tourist operators.

Local anglers are the primary user group. It is a generally held misconception that non-residents are overfishing many water bodies. Non-resident anglers constitute only 20% of the district angling community. Consequently, there are few areas where direct competition between resident and non-resident anglers occur.

Anglers perceive that commercial fish operators compete with them for available lake trout in Lake Superior.

Anglers and tourist outfitters are in conflict regarding access. The outfitters advocate access control to preserve the remoteness of their operations. The anglers prefer to see the maintenance and expansion of access roads. Generally in the district there is a lack of developed and/or maintained access points for anglers.

TABLE 4. LAKES AFFECTED BY DECREASED ENVIRONMENTAL QUALITY

NAME OF WATERBODY	PROBLEM	EFFECT
Aguasabon Lake	Log Drives	Degraded Fish Habitat
Aguasabon River	Log Drives	Degraded Fish Habitat
Beavertrap Lake	Mercury	High Mercury Levels in Fish Flesh
Campfire Lake	Mercury	High Mercury Levels in Fish Flesh
Fields Lake	Mercury	High Mercury Levels in Fish Flesh
Gowan Lake	Mercury	High Mercury Levels in Fish Flesh
Kenabic Lake	Mine Effluent	High Zinc and Cadmium Levels
Island Dam Lake	Mercury	High Mercury Levels in Fish Flesh
Islington Lake	Mercury	High Mercury Levels in Fish Flesh
Jackfish Lake	Mercury	High Mercury Levels in Fish Flesh
Long Lac Lake	Mercury	High Mercury Levels in Fish Flesh
Manitouwadge Lake	Mine Effluent	High Zinc Levels - Degraded Fish Habitat
Mose Lake	Mine Effluent	High Zinc Levels - Degraded Fish Habitat
Portage Lake	Mercury	High Mercury Levels in Fish Flesh
Ramsay Lake	Mercury	High Mercury Levels in Fish Flesh
Rous Lake	Mercury	High Mercury Levels in Fish Flesh
Santoy Lake	Mercury	High Mercury Levels in Fish Flesh
Steel Lake	Mercury	High Mercury Levels in Fish Flesh
Lake Superior (localized areas)	Pulp and Paper Mills, Ore Mining and Milling Municipal Effluent	Degraded Fish Habitat

The two groups are also in direct competition for the fish. On many commercial outpost camp lakes in the district, access is now available by snowmachine or all terrain vehicles much of the year and angling pressure is heavy. This results in a decrease in successful fishing opportunities for the tourist outfitter clientele as well as a loss of remoteness.

Access roads constructed for resource management indirectly access remote tourism lakes, causing them to lose their degree of remoteness.

There is a lack of public awareness or appreciation of some aspects of fisheries management causing conflict between the public and fisheries managers. In some instances the public views the fisheries resource as limitless and unrealistic demands are placed on the resource. On the other hand some fish species are perceived by segments of the public as being undesirable. Non-traditional uses of the fisheries resource such as viewing, or fish as indicators of the health of the environment are often overlooked.

2.4.3 Inadequate Scientific and Technical Information

Fisheries managers are often hampered by inadequate scientific and technical information. Some areas where more information is required are: inventory and assessment; fisheries use and harvest data; extent of illegal fishing activities; validation of commercial fish catches; fisheries productivity and yields; long-term species interactions and native commercial, subsistance and sport fish harvest data.

2.4.4 Access - Lake Superior

Access points onto Lake Superior are very limited due to the rugged terrain, vast stretches of shoreline and the necessity of crossing a railroad line. Increased access onto Lake Superior would increase the fishing opportunities available in Terrace Bay District to both anglers and the commercial fish operators.

2.4.5 Underutilized Species

Lake whitefish, northern pike, yellow perch and pink salmon are

generally underutilized by anglers in the Terrace Bay District. Public misconceptions on the edibility of some of these species exist. There is a lack of public information on how to catch and prepare these underutilized fish. There is also a lack of information on where to catch "trophy" fish of these species.

Commercial fish quotas are not fully utilized. Lake whitefish, chub and lake herring quotas are generally not filled.

2.4.6. Loss of Fish or Fishing Opportunities

Fish or fishing opportunities may be lost due to a variety of reasons. In the Terrace Bay District some of these losses occur due to:

- the illegal introduction of new fish species into a water body (Table 5)
- the illegal harvest of fish
- dams, culverts and bridge construction impeding the movement of fish species
- private, municipal and industrial development such as mines, industries, municipalities and M.N.R. gating roads or closing water supply lakes to fishing.

3.0 OPTIONAL MANAGEMENT STRATEGIES AND TACTICS

3.1 Introduction

Fisheries objectives and targets are the basis upon which fisheries management strategies are developed. The four district fisheries targets are:

(a) To meet the anticipated angling demand in the year 2000 of 122,000 angler days at an angler satisfaction level of 1 kilogram per angler day or 122,000 kg of fish.

(b) To produce 63,313 kg of lake trout (commercial and sport) per year.

(c) To produce 158,316 kg of commercial food fish by the year 2000.

(d) To encourage the bait fish industry to meet the demand to the year 2000 in a manner which ensures the maintenance of stable fish communities.

TABLE 5. NEW FISH SPECIES INTRODUCTIONS

NAME OF WATERBODY	SPECIES INTRODUCED	EFFECT
Lake Superior	Lamprey Pacific Salmon	Decrease lake trout population. Compete with resident fish populations for food and habitat.
Stocked Brook Trout Lakes	Yellow Perch Northern Pike Smallmouth Bass	Outcompete brook trout for food. Prey on brook trout young. Render stocking unsuccessful.

Operational management strategies are broadly planned actions or measures by which a specific objective or target may be achieved. It must be recognized that not all strategies may be implemented, as each strategy has associated financial and social considerations that may lead to compromise in management approaches. Operational management tactics are specific actions that can be carried out in order to implement a particular strategy. In some cases individual tactics or a combination of tactics will be required to achieve a desired result.

Feasible management strategies and tactics are identified and evaluated relative to a specifically stated target. The criteria used to assess these strategies and tactics are as follows: practicality; technical and financial feasibility; contribution to meeting the target; resolution of particular management problems and issues; consistency with policy and legislation; and being within the Ministry's mandate. Concerns that implementation of these strategies and tactics may impact other resource users will be addressed and potential conflicts minimized.

Since a range of options is possible at this time, public consultation is required to confirm the accuracy of the data and assist in defining the problems and issues. Consultation provides the public an opportunity to fully review and comment on all management strategies and tactics considered before a preferred course of action is defined.

3.2 Strategies and Tactics

The following optional management strategies and tactics are listed under the relevant problems and issues headings. These strategies and tactics are management options which will enable the M.N.R. to manage the fish resource and meet the stated targets and objectives.

All of the problems and issues, except the Lake Superior access problem, address all of the targets. The Lake Superior access problem addresses the lake trout, sport and commercial food fish targets only.

The Lake Superior Strategic Fisheries Plan strategies are addressed

by district tactics under "Problems and Issues 3.2.1 to 3.2.6". These are summarized in Appendix A.

3.2.1 Problem/Issue: Loss of Environmental Quality

Strategies:

(a) Increase efforts to determine extent of mercury, other fish contaminants and acid rain problems.

Tactics:

(i) Determine specific representative water bodies to be sampled for mercury, other contaminants and acid rain sampling in the district (i.e. one lake per watershed).

(ii) Recommend increased sampling efforts for mercury, other contaminants and acid rain to the Ontario Ministry of the Environment.

(iii) Encourage interagency support for the acid rain, mercury and other contaminant sampling programs.

(b) Increase public awareness of fish contaminant problems.

Tactic:

(i) Inform and educate the public through the media, public meetings and data distribution.

(c) Prevent degradation of fish habitat.

Tactics:

(i) Review and input into municipal, herbicide and insecticide spray programs, water control structures and bridge construction, access roads, mining exploration, aggregate removal and timber management, other government agency plans, and private sector initiatives.

(ii) Continue to monitor and ensure compliance of pertinent legislation.

(iii) Inform the public of the proper procedures for carrying out activities on Crown land.

(d) Rehabilitate lost fish habitat.

Tactics:

(i) Encourage and work with resource extraction companies to rehabilitate areas affected by their operations.

(ii) Continue to monitor and enforce the ordered rehabilitation of fish habitat.

(iii) Encourage the public to participate in the management of the resource (i.e. Community Fisheries Involvement Programs).

(iv) Rehabilitate degraded habitats in Lake Superior to enhance fish production.

3.2.2 User Conflicts

Strategies:

(a) Enhance understanding and acceptance between user groups.

Tactics:

(i) Promote integrated meetings of user groups and agencies.

(ii) Negotiate Indian Fishing Agreements.

(iii) Encourage dialogue between the public and M.N.R. regarding fishing activities (i.e. conduct fisheries presentations and material to user groups as demand warrants; this could include news releases and media updates; keep fisheries resource documents available for public review; develop a "report a poacher" (RAP) program).

(b) Attempt to minimize user conflicts between anglers and commercial fish operators.

Tactics:

(i) Continue to allocate commercial fish quotas within the total allowable harvest on Lake Superior.

(ii) Monitor the fisheries, both sport and commercial, to maintain good information regarding the status of fish stocks.

(iii) Recommend sport and commercial fish regulation changes as required in order to maintain healthy fish stocks (i.e. close the Lake Superior angling and commercial season for lake trout during the spawning period;

reduce salmonid bag limits; allow dip-netting for pink salmon).

(iv) Continue to undertake patrols and investigations to ensure that applicable regulations and quotas are adhered to.

(v) Implement a program to assess the use of alternative commercial fishing gear and/or seasons.

(vi) Reduce the level of commercial fishing by government buyouts.

(vii) Continue to involve the local commercial fishing association in the process of quota adjustments and allocations.

(viii) Zone Lake Superior for recreational fishing areas and commercial fishing areas (i.e. 1 km from shoreline allocated to recreation; or 2 km from shoreline; or specific areas such as the Slate Islands, Rossport Islands, Coldwell Harbour, Marathon area, Terrace (Hydro) Bay allocated to recreational fishing).

(ix) Do not consider any new commercial fishing licences.

(c) Reduce conflict between anglers and tourist operators.

Tactics:

(i) Consider altering fishing seasons or access on lakes near tourist operations (i.e. post lakes to no motorized vehicles; sign, gate or remove roads that access tourist operator lakes; implement a boat cache system).

(ii) Promote access and good fishing opportunities within close proximity of major communities (i.e. stock Lamont Lake, Three Fingers Lake, Barehead Lake, Santoy Lake, Lake Superior, and other lakes in proximity to major communities; encourage and promote development of access points on Jackfish, Wowun, Little Mose, Agonzon, Dead Otter Lakes, etc. plus on Lake Superior at Coldwell, Marathon and Terrace Bay and other areas in close proximity to major communities; encourage Community Fisheries Involvement Programs in the vicinity of the major communities).

(d) Reduce conflict between tourist operators and resource extractors.

Tactics:

(i) Encourage mutually beneficial roads where desirable (i.e. promote roads built by timber companies to specific lakes where tourist operators could build destination resorts).

(ii) Continue to input into resource management plans and give input regarding proposed road locations.

3.2.3. Inadequate Scientific and Technical Information

Strategies:

(a) Gain more accurate and up-to-date information concerning the fisheries resource and its users.

Tactics:

(i) Conduct lake and stream aquatic inventory surveys. Priority will be given to lake trout lakes, major rivers and streams and lakes which are about to be accessed by roads.

(ii) Continue to conduct assessment and inventories of fish populations in prominent streams and lakes (Steel River, stocked brook trout lakes).

(iii) As a result of the new Provincial fishing licences, conduct angler surveys to gain information regarding utilization and harvest.

(iv) Conduct intensive creel censuses to gain information from specific areas (i.e. Slate Islands, Rossport Islands, Coldwell, etc.).

(v) Use volunteers/co-operators to supply harvest information.

(vi) Continue to monitor the bait fish harvest.

(b) Apply new technology (computers) to aid and expedite data management and reporting.

Tactics:

(i) Continue to train and update staff in the use of computers.

(ii) Acquire appropriate software and hardware.

(c) Encourage and stimulate research on Lake Superior.

Tactics:

(i) Encourage the Lake Superior Unit in the collection of information regarding pacific salmon and the interaction of fish species.

(ii) Encourage the study of stocked lake trout in Lake Superior to determine the stocking and reproductive success of the fish.

(iii) In conjunction with the Lake Superior Unit conduct assessment programs to assess the status of commercial and sport fish stocks in the Terrace Bay District.

(d) Encourage fisheries information exchanges between agencies.

Tactics:

(i) Encourage the review of current literature.

(ii) Continue to develop a fisheries library.

(iii) Encourage communications between research facilities, other agencies and assessment units.

(e) Conduct experimental management projects.

Tactics:

(i) Introduce new species to develop new fisheries (i.e. aurora trout).

(ii) Conduct experimental dip-netting of pink salmon by anglers.

(iii) Consider developing an experimental management program on Killala Lake which would allow limited angling or commercial fishing.

3.2.4 Access - Lake Superior

Strategy:

(a) Encourage the development and maintenance of access points on Lake Superior.

Tactics:

(i) Develop access points to Lake Superior outside of

municipalities and private land (i.e. Jackfish, Hydro Bay, Coldwell, etc.).

(ii) Encourage the development and maintenance of private, municipal, or Federal access points to Lake Superior (i.e. Terrace Bay, Marathon, etc.).

(iii) Make Crown land available for marinas/resorts and points of entry onto Lake Superior.

3.2.5 Underutilized Species

Strategies:

(a) Promote the utilization of lake whitefish, northern pike, yellow perch and pink salmon by anglers, lake whitefish and chub by commercial fish operators, and minnow species by licenced bait fish harvesters.

Tactics:

(i) Expand areas available for whitefish dip-netting.

(ii) Recommend fishing regulation changes to allow for dip-netting of pink salmon.

(iii) Inform the public regarding water bodies which contain "trophy" northern pike or "jumbo" yellow perch in order to attract attention to these species.

(iv) Develop regulations for "trophy fisheries" on certain lakes (i.e. one fish of "trophy" size per angler).

(v) Distribute information packages on fishing and cooking techniques for these species, as well as locating where these species can be caught, to the public and the media.

(vi) Increase access to underutilized fisheries lakes (i.e. Lake Superior for commercial operators and anglers, unaccessed inland minnow lakes for bait fish harvesters).

(vii) Encourage commercial fishermen to target on fish of low angler interest.

3.2.6 Loss of Fish or Fishing Opportunities

Strategies:

(a) Undertake fish community changes in underproducing waters.

Tactics:

(i) Manipulate fish populations in lakes with no or limited sport fish (i.e. walleye into Vein and Dickison Lakes, lake trout into Santoy Lake, brook trout, aurora trout, splake or rainbow trout into suitable waters, chinook salmon into Lake Superior, sucker removal from stocked brook trout waters).

(ii) Encourage public participation in stocking programs through Community Fisheries Involvement Programs (i.e. upwelling boxes to raise brook trout).

(b) Take measures to reduce the possibility of unplanned introductions of fish.

Tactics:

(i) Inform the public through pamphlets and meetings of the problems of introductions of new fish species into water bodies.

(ii) Continue to enforce the regulations regarding the introductions of new fish species.

(iii) Consider new regulations regarding restricted use of live bait in certain water bodies (i.e. Killala Lake, see Section (d); stocked brook trout or aurora trout lakes).

(c) Maintain or rehabilitate fish stocks.

Tactics:

(i) Continue to support the Sea Lamprey Control Program.

(ii) Increase lake trout stocking into Lake Superior for rehabilitation purposes and to provide angling opportunities.

(iii) Increase law enforcement efforts related to angling, commercial bait and food fishing.

(iv) Improve and protect fisheries habitat (i.e. ensure proper stream crossings of resource roads; rehabilitate degraded aquatic habitats in Lake Superior and elsewhere).

(d) Open new fishing areas.

Tactics:

(i) Encourage the development of access points(i.e. onto Lake Superior; underutilized sport fishery lakes; to unaccessed bait fish lakes).

(ii) Consider developing a plan for Killala Lake which would ensure continued egg production yet allow a limited sport fishery. Presently Killala Lake has sanctuary status and no angling is allowed. Eggs are collected from this lake for lake trout production at Dorion and Hills Lake Hatcheries.

4.0 PUBLIC REVIEW

Contained within this document is the resource information which will be used in the development of an approved Fisheries Mangement Plan for the Terrace Bay District. Information and concerns expressed by the public will be carefully considered prior to the completion of a draft plan which will also be presented to the public for review and comment before the final Management Plan is written. Since this Fisheries Management Plan will affect your community as well as the fisheries resource, the Ministry of Natural Resources (M.N.R.) is committed to public consultation. The M.N.R. feels that public involvement and input is essential for the overall success of an approved Fisheries Management Program in the district.

An open house displaying the background information, problems and issues, and optional management strategies will be held to provide the public with an opportunity to discuss, in person, with Ministry staff any and all aspects of the fishery resource, planning process and proposed Management Plan. The Terrace Bay District Fish and Wildlife staff are, however, available at any time should you wish to further discuss fisheries management in the Terrace Bay District or provide additional resource information or potential strategies you feel should be included in the preparation of the district's plan. Comments on this information and for input into this document will be received until December 15, 1986.

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Appendix A. A Summary of Strategies From the Lake Superior Strategic Fisheries Plan

The critical part of the Lake Superior Plan is the specific strategies. These will be addressed by the District Plans. The specific strategies, the objectives they will achieve and the district problems and issues they are designed to address are as follows; tactics to implement these strategies are listed in the plan under each problem/issue.

	Specific Strategy	Objective	District Problems and Issues
A	encourage recreational fishermen to use the fishery resource	sport	loss of fish Lake Superior-Access, underutilized Species
B	increase fish stocking for rehabilitation and to provide angling opportunities	lake trout sport	loss of fish
C	protect and enhance broodstocks of native lean lake trout	lake trout	loss of fish
D	encourage commercial fishermen to target on fish of low angler interest in inshore areas	lake trout commercial sport	loss of fish, user conflicts, underutilized species
E	increase research on lake trout and walleye rehabilitation	lake trout	inadequate knowledge
F	involve the public in the decision making process of government	all four	environmental quality, user conflicts
G	inform the public about the biology and use of fisheries	all four	loss of fish, user conflicts
H	protect the aquatic habitat of Lake Superior so there is no net loss of habitat or desirable species	all four	loss of fish, environmental quality
I	rehabilitate degraded aquatic habitats in Lake Superior to enhance fish production consistant with a self sustaining oligotrophic fish community	all four	loss of fish, environmental quality

	Specific Strategy	Objective	District Problems and Issues
J	stabilize the commercial fishery by creating realistic quotas	commercial	loss of fish, user conflicts
K	identify and encourage sustainable harvest where stocks are currently under-utilized	commercial sport	loss of fish, underutilized species
L	share the harvest of lake trout in Lake Superior equally between anglers and the commercial fishermen	lake trout commercial sport	user conflicts